

NAME \_\_\_\_\_

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**Practice****Properties of Real Numbers**#5 1-22 ALL  
23-29 ODD

Name the sets of numbers to which each number belongs.

1. 6425

2.  $\sqrt{7}$

3.  $2\pi$

4. 0

5.  $\sqrt{\frac{25}{36}}$

6.  $-\sqrt{16}$

7. -35

8. -31.8

Name the property illustrated by each equation.

9.  $5x \cdot (4y + 3x) = 5x \cdot (3x + 4y)$

10.  $7x + (9x + 8) = (7x + 9x) + 8$

11.  $5(3x + y) = 5(3x + 1y)$

12.  $7n + 2n = (7 + 2)n$

13.  $3(2x)y = (3 \cdot 2)(xy)$

14.  $3x \cdot 2y = 3 \cdot 2 \cdot x \cdot y$

15.  $(6 + -6)y = 0y$

16.  $\frac{1}{4} \cdot 4y = 1y$

17.  $5(x + y) = 5x + 5y$

18.  $4n + 0 = 4n$

Name the additive inverse and multiplicative inverse for each number.

19. 0.4

20. -1.6

21.  $-\frac{11}{16}$

22.  $5\frac{5}{6}$

Simplify each expression.

23.  $5x - 3y - 2x + 3y$

24.  $-11a - 13b + 7a - 3b$

25.  $8x - 7y - (3 - 6y)$

26.  $4c - 2c - (4c + 2c)$

27.  $3(r - 10s) - 4(7s + 2r)$

28.  $\frac{1}{5}(10a - 15) + \frac{1}{2}(8 + 4a)$

29.  $2(4 - 2x + y) - 4(5 + x - y)$

30.  $\frac{5}{6}\left(\frac{3}{5}x + 12y\right) - \frac{1}{4}(2x - 12y)$

~~31. TRAVEL~~ Olivia drives her car at 60 miles per hour for  $t$  hours. Ian drives his car at 50 miles per hour for  $(t + 2)$  hours. Write a simplified expression for the sum of the distances traveled by the two cars.

~~32. NUMBER THEORY~~ Use the properties of real numbers to tell whether the following statement is true or false; If  $a > b$ , it follows that  $a\left(\frac{1}{a}\right) > b\left(\frac{1}{b}\right)$ . Explain your reasoning.

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## Practice Solving Equations

Write an algebraic expression to represent each verbal expression.

1. 2 more than the quotient of a number and 5
2. the sum of two consecutive integers
3. 5 times the sum of a number and 1
4. 1 less than twice the square of a number

Write a verbal expression to represent each equation.

5.  $5 - 2x = 4$
6.  $3y = 4y^3$
7.  $3c = 2(c - 1)$
8.  $\frac{m}{5} = 3(2m + 1)$

Name the property illustrated by each statement.

9. If  $t - 13 = 52$ , then  $52 = t - 13$ .
10. If  $8(2q + 1) = 4$ , then  $2(2q + 1) = 1$ .
11. If  $h + 12 = 22$ , then  $h = 10$ .
12. If  $4m = -15$ , then  $-12m = 45$ .

Solve each equation. Check your solution.

13.  $14 = 8 - 6r$
14.  $9 + 4n = -59$
15.  $\frac{3}{4} - \frac{1}{2}n = \frac{5}{8}$
16.  $\frac{5}{6}s + \frac{3}{4} = \frac{11}{12}$
17.  $-1.6r + 5 = -7.8$
18.  $6x - 5 = 7 - 9x$
19.  $5(6 - 4v) = v + 21$
20.  $6y - 5 = -3(2y + 1)$

Solve each equation or formula for the specified variable.

21.  $E = mc^2$ , for  $m$
22.  $c = \frac{2d + 1}{3}$ , for  $d$
23.  $h = vt - gt^2$ , for  $v$
24.  $E = \frac{1}{2}Iw^2 + U$ , for  $I$

Define a variable, write an equation, and solve the problem.

25. **GEOMETRY** The length of a rectangle is twice the width. Find the width if the perimeter is 60 centimeters.
26. **GOLF** Luis and three friends went golfing. Two of the friends rented clubs for \$6 each. The total cost of the rented clubs and the green fees for each person was \$76. What was the cost of the green fees for each person?

1-4

**Study Guide and Intervention** (continued)**Solving Absolute Value Equations**

**Absolute Value Equations** Use the definition of absolute value to solve equations containing absolute value expressions.

For any real numbers  $a$  and  $b$ , where  $b \geq 0$ , if  $|a| = b$  then  $a = b$  or  $a = -b$ .

Always check your answers by substituting them into the original equation. Sometimes computed solutions are not actual solutions.

**Example**Solve  $|2x - 3| = 17$ . Check your solutions.**Case 1**

$a = b$

$2x - 3 = 17$

$2x - 3 + 3 = 17 + 3$

$2x = 20$

$x = 10$

**CHECK**

$|2x - 3| = 17$

$|2(10) - 3| = 17$

$|20 - 3| = 17$

$|17| = 17$

$17 = 17 \checkmark$

**Case 2**

$a = -b$

$2x - 3 = -17$

$2x - 3 + 3 = -17 + 3$

$2x = -14$

$x = -7$

**CHECK**  $|2(-7) - 3| = 17$

$|-14 - 3| = 17$

$|-17| = 17$

$17 = 17 \checkmark$

There are two solutions, 10 and -7.

**Exercises**

#s 1-15 ODD

Solve each equation. Check your solutions.

1.  $|x + 15| = 37$

2.  $|t - 4| - 5 = 0$

3.  $|x - 5| = 45$

4.  $|m + 3| = 12 - 2m$

5.  $|5b + 9| + 16 = 2$

6.  $|15 - 2k| = 45$

7.  $5n + 24 = |8 - 3n|$

8.  $|8 + 5a| = 14 - a$

9.  $\frac{1}{3}|4p - 11| = p + 4$

10.  $|3x - 1| = 2x + 11$

11.  $\left|\frac{1}{3}x + 3\right| = -1$

12.  $40 - 4x = 2|3x - 10|$

13.  $5f - |3f + 4| = 20$

14.  $|4b + 3| = 15 - 2b$

15.  $\frac{1}{2}|6 - 2x| = 3x + 1$

16.  $|16 - 3x| = 4x - 12$

